Soil Erosion and Sedimentation Control in Northern Michigan

Grand Traverse County
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Controlling erosion protects water quality.

Soil Erosion Is a Costly Problem

Eroding construction sites are a leading cause of water quality problems in northern Michigan. For every acre under construction, about a dump truck and a half of soil washes into a nearby lake or stream unless the builder uses erosion controls. Problems caused by this sediment include:

Local taxes—Cleaning up sediment in streets, sewers and ditches adds extra costs to local government budgets.

Dredging—The expense of dredging sediment from lakes, harbors and navigation channels is a heavy burden for taxpayers.

Lower property values—Property values are damaged when a lake or stream fills with sediment. Shallow areas encourage weed growth and create boating hazards.

Poor fishing—Silt and sediment smothers gravel beds where fish such as trout find food and lay their eggs.

Nuisance growth of weeds and algae—Sediment carries nutrients (eg.: fertilizers) that fuel algae and weed growth and make water unattractive for swimming.

Controlling Erosion is Easy

Erosion control is important even for home sites of an acre or less. The materials needed are easy to find and relatively inexpensive—silt fence, stakes, plastic tubes, top soil, grass seed and mulch. Putting these materials to use is a straightforward process. Some controls which may be needed include:

- **Preserving** existing trees and grass where possible to prevent erosion;
- **Silt fence** to trap sediment on the downslope sides of the lot;
- **Soil piles** located away from any roads or waterways;
- **Cleanup** of sediment carried off-site by vehicles or storms;
- **Stone drain beds or downspout extenders** to prevent erosion from roof runoff; and
- **Revegetate** as soon as possible, using native plants.

A soil erosion control permit is needed if your project:

- Is within 500 feet of a lake or stream
- Disturbs more than one acre of land

Additionally, a permit ***may*** be needed if your site:

- is a commercial development
- is within 100 feet of a regulated wetland
- has a slope of 10% or more
- has heavy clay and/or hydric soils
- or if a permit is required by your local unit of government
- has a drainage easement

A permit from the Michigan Department of Environmental Quality is required within:

- the High Water Mark of a lake or stream
- a regulated wetland
- a high risk erosion area
- a 100 year floodplain of a river or stream

Soil Erosion & Sedimentation Control Practices for Home Sites

SILT FENCE

- Available from construction supply companies.
- Install prior to excavation.
- Install on downslope sides of the site parallel to contour of land.
- Extends end upslope enough to allow water to pond behind fence.
- Bury 4"- 8" of fabric in trench (See commonly used Erosion Controls)
- Leave no gaps. Intertwine sections of silt fence.
- Inspect and repair once a week or after every ½ inch rain. Remove sediment if deposits reach half the fence height.
- Maintain until vegetation is established.
- Remove after vegetation is established.

DRAINAGE SWALE AND CHECK DAMS

Grassed drainage swales or waterways reduce the runoff velocity of Stormwater and allow for infiltration into the soil.

Check dams, made of stone, can be placed on the bottom of drainage swales- across the path of stormwater flow-to assist with water velocity reduction and infiltration.

- The side slope of the swale should be 3:1 or flatter if the site allows.
- To prevent erosion, the middle of dam must be lower than the outer edges at natural ground elevation.

ROOF RUNOFF

To manage storm water runoff from rooftops, install stone drain beds or gutters with downspout extenders. These techniques reduce erosion and protect surrounding vegetation.

Stone Drain Beds

- Place a strip of small stones 4-6 inches deep which will extend at least 6 inches past the drip line surrounding your home or structure (not needed under gable roof end).
- Do not use stone beds, when basements or crawlspaces are located in clay or sandy loam soil.

Gutters with Downspout Extenders

- Use plastic drainage pipe to direct water to a grassed or other appropriate area for infiltration.

SOIL PILES

- Locate away from any downslopes, street, driveway, stream, lake, wetland, ditch or drainage way.
- Temporary seed such as annual rye or winter wheat is recommended for topsoil piles.

WIND EROSION

- During high winds, exposed soil may need to be watered down to prevent soil from leaving the site.

SEDIMENT CLEANUP

- Immediately sweep or scrape up soil tracked onto the road.
- Immediately after a storm, clean up the soil washed off-site.

SEWER INLET PROTECTION

- Protect on-site storm sewer inlets with silt fences.
- Inspect, repair and remove sediment deposits after every storm.
- Install filter bags in existing catch basins. Remove and clean when sediments accumulate.

PRESERVE EXISTING VEGETATION

- Wherever possible, preserve existing trees, shrubs, and other vegetation.
- Minimize the area of disturbance near lakes, streams, and wetlands.
- To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation.
- Place plastic mesh or snow fence barriers around trees to protect the area below the branches.

REVEGETATION

- Seed, sod or mulch bare soil as soon as possible.
- Establish buffer strips of vegetation at least 25' wide adjacent to water bodies for water quality protection.
- Plant native species, if possible (See local Soil Conservation District for suggestions).
- Rake lightly to cover seed with ¼" of soil. Roll lightly.
- Mulch with straw (two-three bales per 1000 sq ft.).
- On steep slopes, anchor mulch by watering or using netting or use a mulch blanket per manufacturer's instruction.
- Water gently every day or two to keep soil moist. Less watering is needed once grass is 2" tall. Do not over saturate.

SODDING

- Spread 4 to 6 inches of topsoil.
- Fertilize and lime *only* if needed according to soil test.
- Lightly water the soil.
- Lay sod. Tamp or roll lightly.
- On slopes, lay sod starting at the bottom and work toward the top, laying in a brickwork pattern. Peg each piece down in several places.
- Initial watering should wet soil 6" deep (or until water stands 1" deep in a straight-sided container). Then water lightly every day or two to keep soil moist, but not saturated, for 2 weeks.
- Generally, the best times to sod or seed are early fall (Aug 15-Sept 15) or spring (May)

If Construction is completed after September 15, permanent seeding should be delayed.

Sod may be laid until November 15.

Temporary seed (such as rye or winter wheat) may be planted until October 15.

Mulch or matting may be applied after October 15, if weather permits.

Silt fences must be maintained until the disturbed area is stabilized with seeding, sodding or appropriate ground cover.